

CLAIMS

1. Use of a peptide comprising the amino acid sequence

$X_1 X_2 X_3 W M X_4 X_5 X_6 X_7$

wherein

the sequence X_1 to X_7 is an amino acid sequence comprising at least 9 amino acids, which may optionally be interrupted by one or two amino acid residues between one or more of the 9 amino acid positions defined herein;

X_1 is selected from W, T, PE, KQI, VV, PQT, H, RI and absent;

X_2 is an amino acid with an aromatic side chain;

X_3 is P or D;

X_4 is an amino acid with a basic side chain;

X_5 is an amino acid with a charged side chain;

X_6 is an amino acid with a charged side chain; and

X_7 is an amino acid with a basic side chain or Serine;

in the manufacture of a medicament for treating or preventing a disorder in which aberrant cell division occurs.

2. Use according to claim 1 wherein X_2 is Y, F or W.
3. Use according to claim 1 or 2 wherein X_4 is K, R or H.
4. Use according to any one of the preceding claims wherein X_5 is K, R, E, H, D, N or Q.
5. Use according to any one of the preceding claims wherein X_6 is K, R, E, H, D, N or Q.
6. Use according to any one of the preceding claims wherein X_7 is H, S, R or K.
7. Use according to claim 1 wherein X_2 is F or Y, X_4 is K or R, X_5 is K, R or E, X_6 is H, R, Q or K and X_7 is H, S, R or K.
8. Use according to claim 7 wherein X_2 is Y and X_3 is P.
9. Use according to claim 8 wherein said peptide X_1 to X_7 has the amino acid sequence W Y P W M K K H H R.
10. Use according to any one of the preceding claims wherein said peptide further comprises a cell penetration moiety.

11. Use according to claim 10 wherein said cell penetration moiety is linked directly to the carboxy- terminal of the peptide X₁ to X₇.

12. Use according to claim 10 or 11 wherein said cell penetration moiety has the amino acid sequence:

X₈ Q I K I W F Q N R R M K W K K

wherein X₈ is R or Q.

13 Use according to claim 10 or 11 wherein said cell penetration moiety has the amino acid sequence

X₈ Q X₉ X₁₀ X₁₁ W F Q N X₁₂ X₁₃ M X₁₄ W X₁₅ X₁₆

wherein

X₈ is R or Q,

X₉, X₁₁ are each independently I or L, and

X₁₀, X₁₂, X₁₃, X₁₄, X₁₅ and X₁₆ are each independently K or R

14 Use according to claim 10 or 11 wherein said cell penetration moiety has the amino acid sequence:

QIRIWFQNRRMKWKK;

QIKIWFQNKRMKWKK;

QIKIWFQNKKKMKWKK;

QIRIWFQNRKMKWKK;

QIRIWFQNRRMRWKK;

QIRIWFQNRRMKWRK;

QIRIWFQNRRMKWKR;

QIRIWFQNRRMKWRR;

QIRIWFQNRRMKWKK;

QIKIWFQNRRMKWRK;

QIRIWFQNKRMKWRK;

QIKLWFQNRRMKWKK,

QLKLWFQNRRMKWKK; or

QLRIWFQNRRMKWKK.

15. Use according to claim 10 wherein said peptide has the sequence

W Y P W M K K H H R Q I K I W F Q N R R M K W K, or

W Y P W M K K H H R Q I K I W F Q N R R M K W K K

16. Use according to claim 1 wherein said peptide has the sequence
W Y P W M K K H H R.
17. Use according to any one of the preceding claims wherein said disorder is a cancer.
18. Use according to any one of the preceding claims wherein said cells express one or more Hox genes.
19. Use according to any one of the preceding claims wherein PBX does not act as an oncogene in said cells.
20. Products containing a peptide as defined in any one of claims 1 to 16 and a cytotoxic or chemotherapeutic agent as a combined preparation for simultaneous, sequential or separate use in the treatment or prevention of a disorder in which aberrant cell division occurs.
21. Use of a peptide as defined in any one of claims 1 to 16 in the manufacture of a medicament for treating or preventing a disorder in which aberrant cell division occurs, wherein the patient is also administered a cytotoxic or chemotherapeutic agent.
22. Use of a cytotoxic or chemotherapeutic agent in the manufacture of a medicament for treating or preventing a disorder in which aberrant cell division occurs, wherein the patient is also administered a peptide as defined in any one of claim 1 to 16.
23. Use of a peptide as defined in any one of claims 1 to 16 in the manufacture of a medicament for reducing the side effects of a cytotoxic or chemotherapeutic agent.
24. Use of a peptide as defined in any one of claims 1 to 16 in the manufacture of a medicament for maintaining or expanding a stem cell population *in vivo*.
25. A method of treating a disorder in which aberrant cell division occurs in a human or animal comprising administering to said human or animal a therapeutically effective amount of a peptide as defined in any one of claims 1 to 16.
26. A method according to claim 25 wherein said human or animal is also administered a cytotoxic or chemotherapeutic agent.
27. A method of maintaining or expanding stem cells *ex vivo* comprising contacting said stem cells with a peptide as defined in any one of claims 1 to 16.

28. A method according to claim 27 further comprising the step of culturing said cells in the absence of said peptide.
29. A stem cell that has been maintained or expanded by a method according to claim 27 or 28.
30. A method according to claim 27 or 28 further comprising the step of administering said stem cells to a patient in need thereof.
31. Use of a stem cell according to claim 29 in the manufacture of a medicament for the treatment or prevention of a condition resulting in a decreased level of stem cells.
32. Use according to claim 31 wherein said condition results from chemotherapy or radiotherapy.
33. Use according to claim 31 or 32 wherein said stem cells are originally derived from the recipient individual.
34. A pharmaceutical composition comprising a peptide as defined in any one of claims 1 to 16 and a pharmaceutically acceptable carrier.
35. A pharmaceutical composition according to claim 32 further comprising a cytotoxic or chemotherapeutic agent.